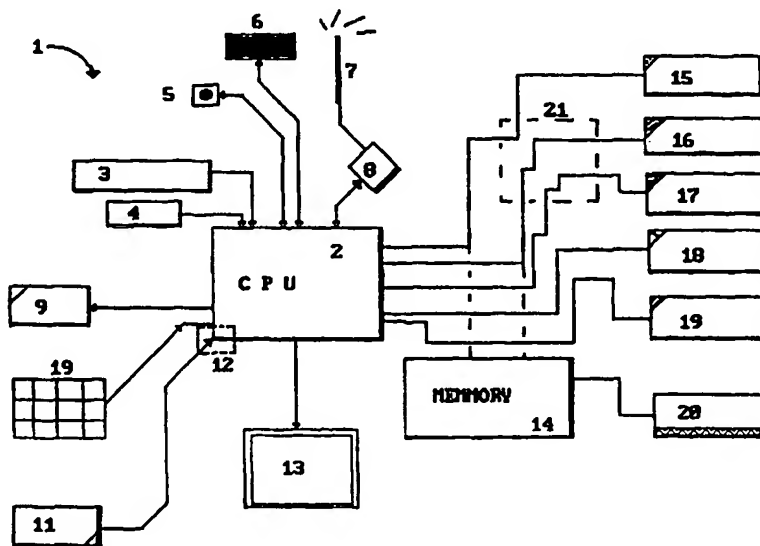




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification : <b>Not classified</b>		<b>A2</b>	(11) International Publication Number: <b>WO 00/36900</b>
			(43) International Publication Date: 29 June 2000 (29.06.00)
(21) International Application Number: PCT/ZA99/00143 (22) International Filing Date: 15 December 1999 (15.12.99) (30) Priority Data: 98/11609                      18 December 1998 (18.12.98)    ZA 98/11610                      18 December 1998 (18.12.98)    ZA (71)(72) Applicant and Inventor: FOURIE, Louise [ZA/ZA]; 7 Buffalo Street, Vygeboom, 7550 Cape Town (ZA). (74) Agent: NEL, Pierre, Hercules; 502 Tennessee Street, Faerie Glen, 0052 Pretoria (ZA).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  Published <i>Without international search report and to be republished upon receipt of that report.</i>	

(54) Title: METHOD AND SYSTEM FOR MONITORING AND COMMUNICATING DATA OVER A WIRELESS NETWORK



## (57) Abstract

The present invention relates to a method and system for monitoring and recording of data inputs and communicating the data over a wireless network to a computer network of a service provider. In particular the invention includes modular medical censoring and monitoring devices that is linked to a processor for processing the data and communicating the data to a service provider in real time or at a predetermined future data. Furthermore the invention includes processing of the data and displaying the data on the display means of the communication device. Also included within the scope of the invention is the step of associating voice inputs with pre-programmed datasets including numbers of telephone subscribers and certain predefined or preprogrammed instructions.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakhstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

# METHOD AND SYSTEM FOR MONITORING AND COMMUNICATING DATA OVER A WIRELESS NETWORK

## TECHNICAL FIELD

The present invention relates to a method and system for monitoring and recording of data  
5 inputs and communicating the data over a wireless network to a computer network of a  
service provider. More specifically the present invention allows for the monitoring and  
recording of medical data and for relaying it to a computer network of a doctor or medical  
institution for analysis. Alternatively the data may be used for personal use. By integrating  
a communication device with a medical monitoring and recording unit users may benefit  
10 from an integrated unit comfortably worn around their arm or wrist and use the existing  
computing and processing capabilities of a processor associated with the device to  
generate data and report either for the user or a service provider. It is envisaged that users  
may access data and information from integrated communication technology or protocols  
such as WAP and Blue-tooth technology.

15

## BACKGROUND ART

20 With the introduction of electronic medical monitoring packs and wireless systems there has  
been an increasing need to create an arm or wrist worn device since prior communication  
devices lacks the ability to be worn in a watch like format and to include medical  
monitoring and recording means. Furthermore the present invention may integrate mobile  
communications technology associated with mobile phones either being digital or  
25 analogue phones for example operating on a cellular network, with the medical censoring

and monitoring means. Furthermore data and information relating to medical readings may be communicated over the communications network supporting mobile telephony.

5

## OBJECTIVES OF THE INVENTION

Accordingly it is an object of the present invention to provide a method and system for the monitoring, recording and processing of inputs relating to medical monitoring or censoring and pre-programmed user inputs. It is a further object of the invention to provide a system  
10 for and method of monitoring and recording medical data and communicating the data over a wireless network and with which the applicant believes disadvantages of known systems may at least be alleviated.

15

## DISCLOSURE OF INVENTION

According to the first aspect of the invention there is included a system for recording and  
5 processing data comprising a sensor interconnected with a processor, the sensor adapted  
to read inputs from a user, memory means adapted to store data, communication means for  
relaying the data to a remote location and a computer program stored on the memory  
means adapted to, on demand, generate a report relevant to the recorded data.

10 According to the second aspect of the invention the remote location may comprise a  
computer operated facility of at least a service provider

According to the third aspect of the invention the remote base may comprise a computer  
15 of an associated user.

According to the fourth aspect of the invention the method of recording and processing  
data may include the steps of: providing at least one censoring device interconnected to  
a processor;

20

- inputting predetermined subject matter at the censoring device;
- reading inputs from the censoring device and storing same on memory

means provided;

- relaying the subject matter to an associated station at a remote base; and
- generating a report relevant to the subject matter.

5 According to the fifth aspect of the invention the method may include the step of interconnecting the censoring device to a wireless communication device adapted to facilitate bi-directional communication over a mobile telephone network.

10 According to the sixth aspect the invention the step of associating the censoring device with a modular unit which may be adapted to be inter-connectable to integrated circuitry associated with the communication device.

According to the seventh aspect the invention the method may include the step of  
15 associating the processor with a selection of: the communication device, a modular processor, and an applications module adapted to be integrateable with the communications device

According to the eight aspect the invention the remote base may be that of a service  
20 provider selected from: a hospital, a doctor, a medical research facility, a nurse and a

computer network associated with medical applications.

According to the ninth aspect the invention the the report may be generated is a selection of: a summary of a users health, - preprogramed organ and- metabolismic function.

5

According to the tenth aspect the invention the step the step of generating a report may be executed in relation to the monitoring of an aspect of a users organic functions in a selection of: real time, a predetermined time slot and a predetermined future time.

10 According to the eleventh aspect the invention the method may include the step of notifying a service provider at the remote base where certain predetermined conditions are met.

According to the twelfth aspect the invention the notification may be conducted as a  
15 selection of one of the following, an alarm which is generated at the service provider regrading vital subject matter read by the censor in relation to a predetermined user and furthermore include the step of notifying the user when predetermined conditions are met.

20 According to the thirteenth aspect the invention the modification of a user may include

an alarm selected from an audio signal and mechanical signal being reproduced by the components of the system.,

According to the fourteenth aspect the invention the when in the notification of a service  
5 provider may be conducted by a selection of the following; short message service by cellular telephone technology, conventional call an -data call.

According to the fifteenth aspect of the invention there wherein the method may include  
10 the step of notifying of a service provider which includes transmittal of data to a communication device associated with a user selected from: a land line telephone device , a mobile phone device and a paging device and the step of updating a database associated with the service provider according to predetermined user data.



## BRIEF DESCRIPTION OF DRAWINGS

5 Preferred embodiments of the invention will now be described by means of non-limiting examples only, with reference to the accompanying diagrams wherein:

Figure 1 is a simple block diagram of the electronic components of the invention;

10 Figure 2 relates to a voice recognition system which allows user to use certain pre-programmed functions;

Figure 3 relates to the process of recording and updating of medical readings; and

15 Figure 4 relates to the recording of voice commands and communicating in data format the commands over a wireless network

## BEST MODES FOR CARRYING OUT THE INVENTION

Turning to **Figure 1** which is a simple block diagram of the electronic components(1) of  
5 the invention consisting of a CPU (2) that may be powered by means of a battery (3)  
and/or via solar energy (4). Output means may include the display unit or LCD screen  
(13)and the speaker (9)that may all be connected directly or indirectly to the CPU. Input  
means may include the keypad (19) and the microphone (11) which may be used directly  
or via an electronic component or software to do voice recognition (12). The CPU may  
10 allow for external communication by means of the aerial (7) directly or via an interface  
(8). Other forms of external communication is made possible via a cable connection (5)  
and/or via an Infra Red communication device or interface (6) The unit may also have  
memory means or modules (14) and/or via a portable storage device i.e. a smartcard (not  
shown) which may be ungradable (20). Furthermore the invention may include for one or  
15 more medical sensors or monitors (15 to 19) may be connected directly to the CPU or  
memory or via a interface (21) .

**Figure 2** relates to a voice recognition system (22) which allows user to use certain  
functions (23) for example to record (24) a sound wave (26, 29, 31 and 34)) and/or pattern  
20 (25) for identification (27) of a person (28) or an organization (29, 30, 32 and 35) which

may be processed by the CPU (37) or interface (38) or be stored on the memory means for processing a function i.e. a call (33) to a doctor (35) which is processed and forwarded (36) for comparison with similar wave forms (40) associated with the identity (41) and phone number for initiating a call (42)

5

**Figure 3** relates to the process (43) of recording and updating of medical readings which may be done on a predetermined bases (47) but not forwarded in real time (45) where each rereading is independently monitored and communicated (48) to the CPU (50) and/or memory (49) of the unit. Furthermore the readings may be processed and be displayed  
10 on the display means (51) and/or communicated via the cable and/or IR link to a PC. Also included within the scope of the invention the readings may be communicated via wireless communication means (53) to the user base or to doctor or hospital via one or more of the following; fax (54), SMS (55) and via a data-call (56)

15 **Figure 4** relates to the recording of voice commands and communicating in data format the commands over a wireless network

## CLAIMS

1. A system for recording and processing data comprising a sensor interconnected with a processor , the sensor adapted to read inputs from a user, memory means adapted to store data, communication means for relaying the data to a remote location and a computer program stored on the memory means adapted to , on demand , generate a report relevant to the recorded data.  
5
1. A system as claimed in claim 1 in which the remote location comprises a computer operated facility of at least a service provider  
10
2. A system as claimed in claim 1 or 2 in which the remote base comprises a computer of an associated user.
- 15 3. A method of recording and processing data including the steps of: providing at least one censoring device interconnected to a processor;
  - inputting predetermined subject matter at the censoring device;
  - reading inputs from the censoring device and storing same on memory  
20 means provided;

- relaying the subject matter to an associated station at a remote base; and
- generating a report relevant to the subject matter.

- 5 4. A method as claimed in claim 4 including the step of interconnecting the censoring device to a wireless communication device adapted to facilitate bi-directional communication over a mobile telephone network.
- 10 5. A method as claimed in claim 1 or 2 including the step of associating the censoring device with a modular unit adapted to be inter-connectable to integrated circuitry associated with the communication device.
- 15 6. A method as claimed in any of the preceding claims wherein the step of associating the processor with a selection of: the communication device, a modular processor, and an applications module adapted to be integrateable with the communications device.
- 20 7. A method as claimed in any of the preceding claims wherein the remote base is that of a service provider selected from: a hospital, a doctor, a medical research facility, a nurse and a computer network associated with medical applications.

8. A method as claimed in any of the preceding claims in which the report generated is a selection of: a summary of a users health, - preprogramed organ and-metabolismic function.

5

9. A method a claimed in any of the preceding claims wherein the step of generating a report is executed in relation to the monitoring of an aspect of a users organic functions in a selection of: real time, a predetermined time slot and a predetermined future time.

10

10. A method a claimed in any one of the preceding claims including the step of notifying a service provider at the remote base where certain predetermined conditions are met.

15

11. A method as claimed in claim 11 in which the notification is conducted as a selection of one of the following, an alarm is generated at the service provider regrading vital subject matter read by the censor in relation to a predetermined user.

- 20 12. A method as claimed in any one of the preceding claims including the step of

notifying the user when predetermined conditions are met.

13. A method as claimed in claim 13 wherein the modification of a user includes an alarm selected from an audio signal and mechanical signal being reproduced by the components of the system.

14. A method as claimed in any of the preceding claims when in the notification of a service provider is conducted by a selection of the following; short message service by cellular telephone technology, conventional call an -data call.

10

15. A method as claimed in any of the preceding claims wherein the step of notification of a service provider includes transmittal of data to a communication device associated with a user selected from: a land line telephone device , a mobile phone device and a paging device.

15

16. A method a claimed in any one of the preceding claims including the step of updating a database associated with the service provider according to predetermined user data.

20

1/4

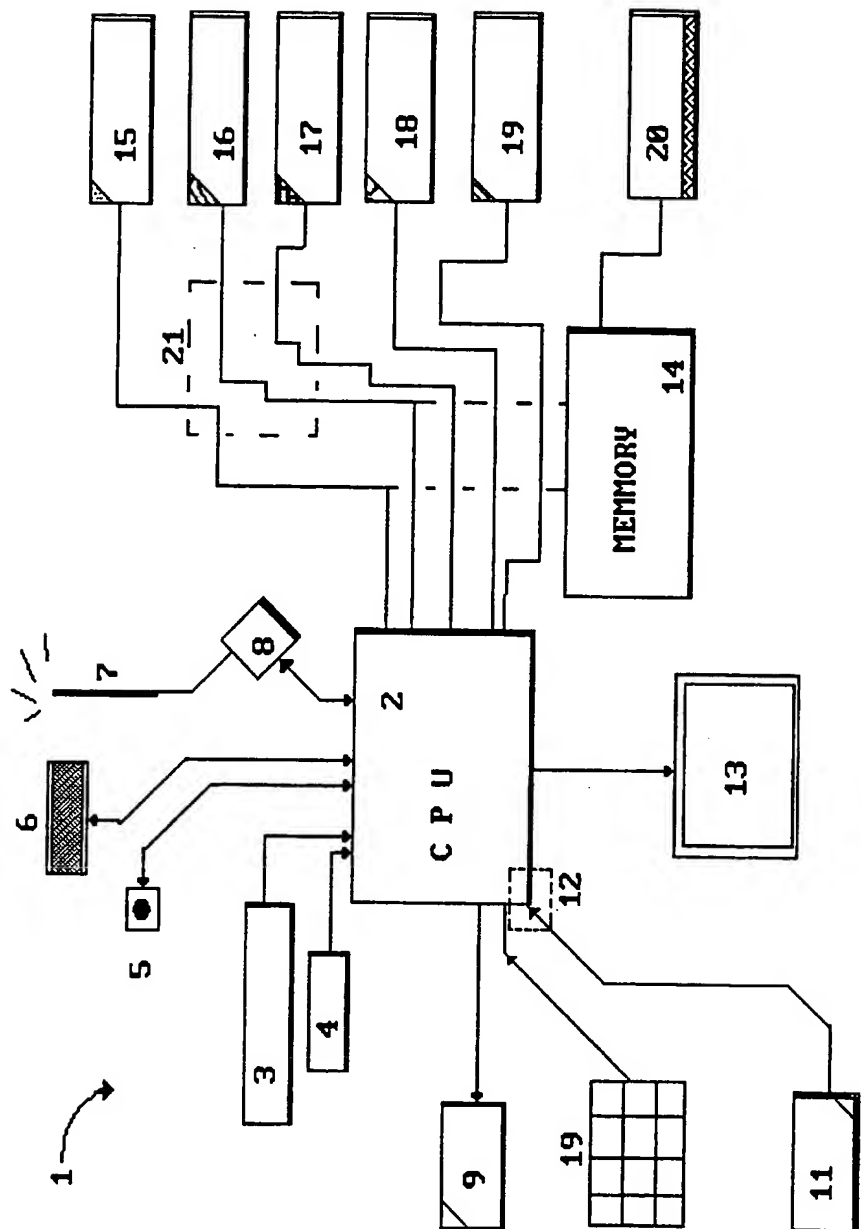
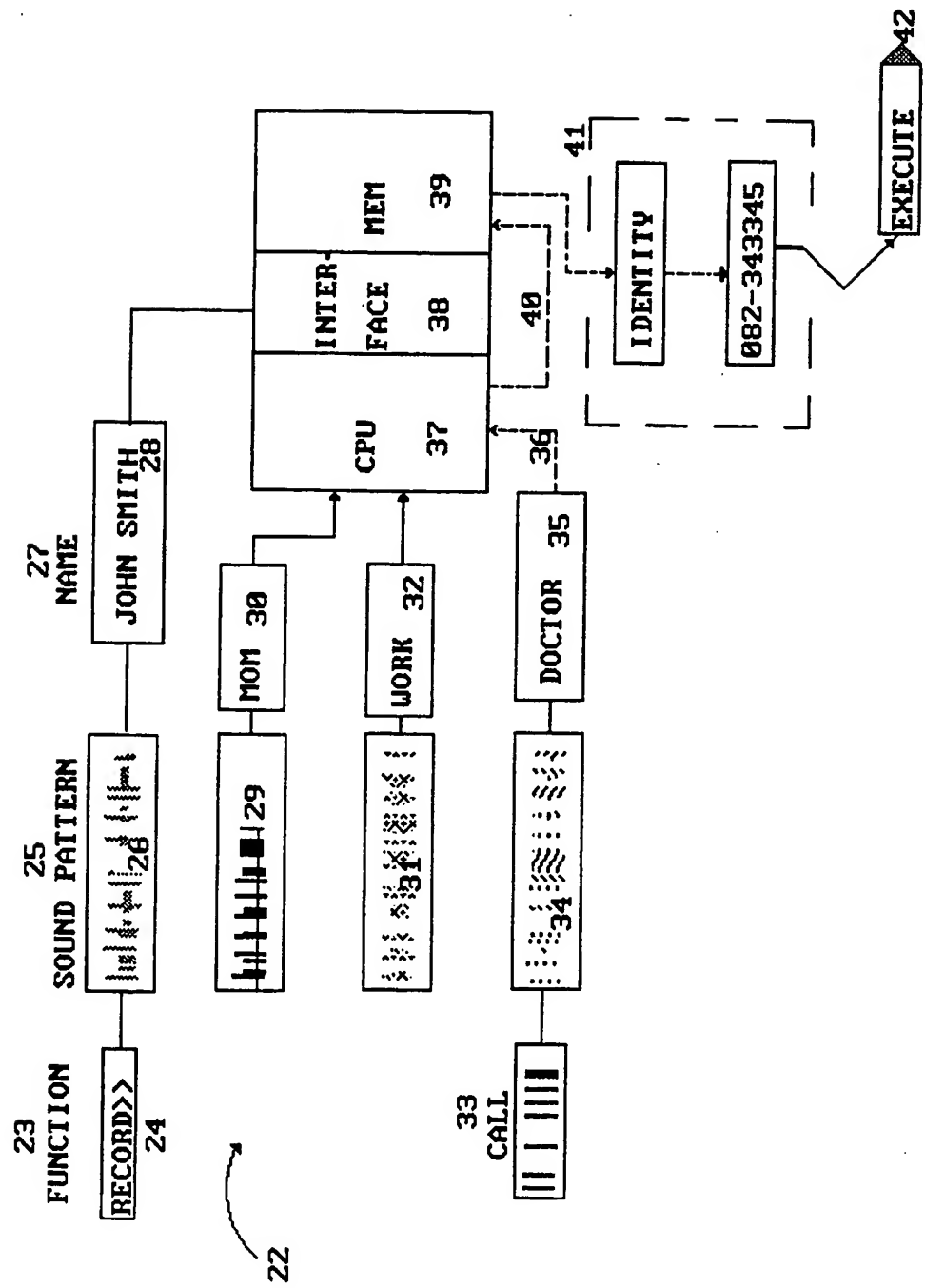


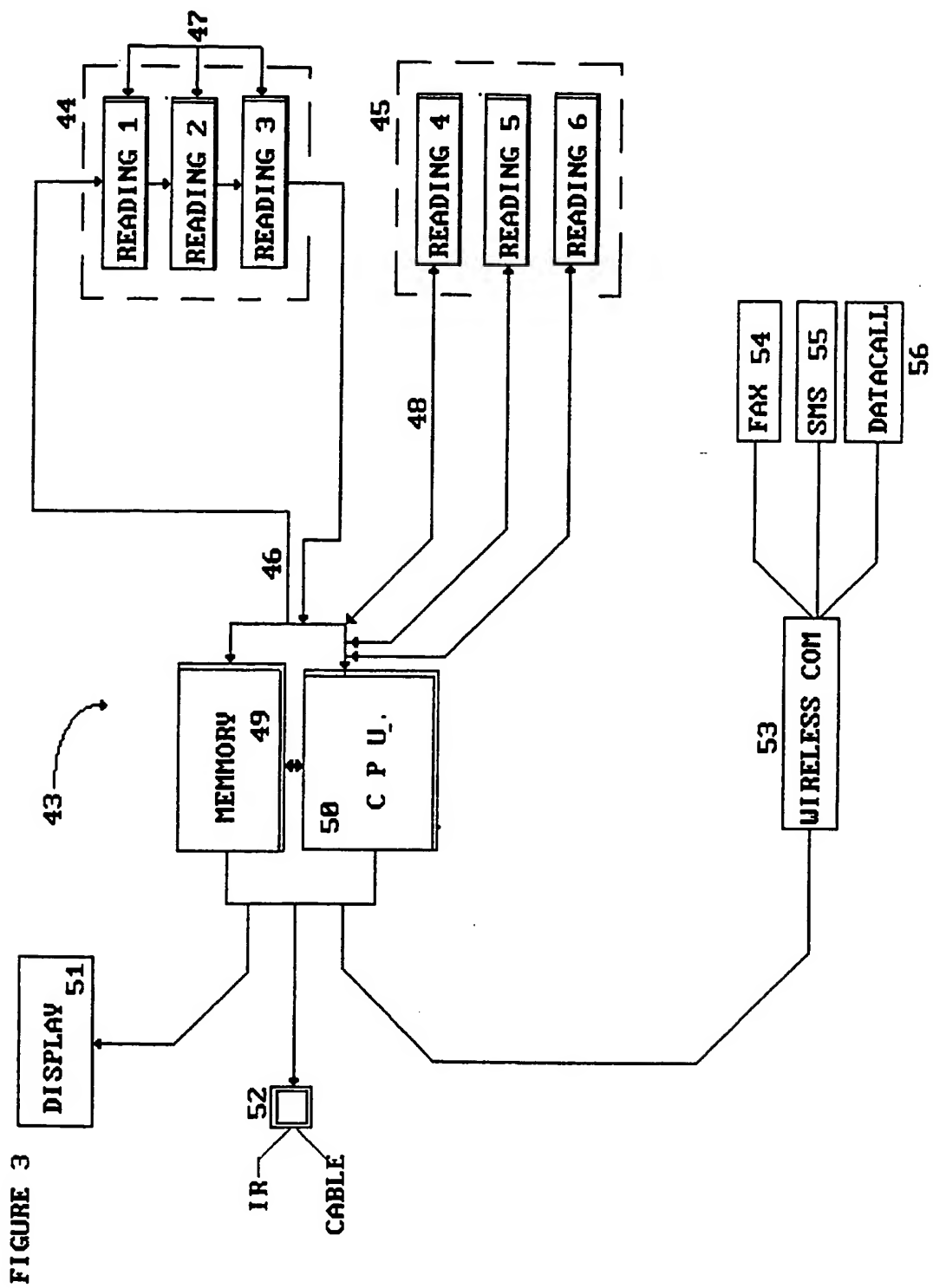
FIGURE 1



FIGURE 2

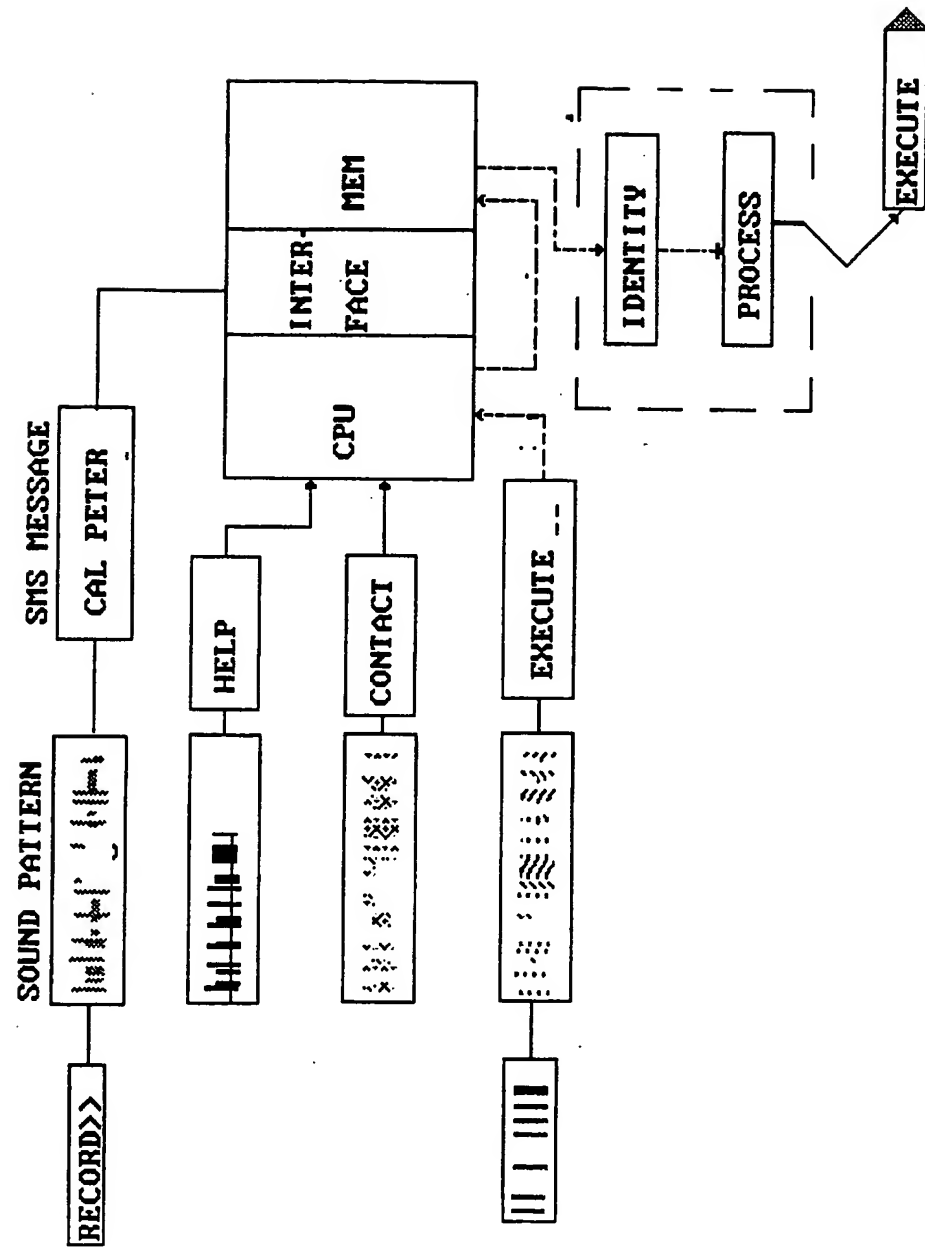


3/4



4/4

FIGURE 4





## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification<sup>7</sup> :</b> <b>A61B 5/00, G06F 19/00</b>	<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 00/36900</b> <b>(43) International Publication Date:</b> 29 June 2000 (29.06.00)
<b>(21) International Application Number:</b> PCT/ZA99/00143 <b>(22) International Filing Date:</b> 15 December 1999 (15.12.99) <b>(30) Priority Data:</b> 98/11609                      18 December 1998 (18.12.98)    ZA 98/11610                      18 December 1998 (18.12.98)    ZA <b>(71)(72) Applicant and Inventor:</b> FOURIE, Louise [ZA/ZA]; 7 Buffalo Street, Vygeboom, 7550 Cape Town (ZA). <b>(74) Agent:</b> NEL, Pierre, Hercules; 502 Tennessee Street, Faerie Glen, 0052 Pretoria (ZA).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  Published <i>With international search report.</i>  <b>(88) Date of publication of the international search report:</b> 26 October 2000 (26.10.00)
<b>(54) Title:</b> METHOD AND SYSTEM FOR MONITORING AND COMMUNICATING DATA OVER A WIRELESS NETWORK  <div data-bbox="483 1134 1250 1680" data-label="Diagram"> </div>		
<b>(57) Abstract</b>  The present invention relates to a method and system for monitoring and recording of data inputs and communicating the data over a wireless network to a computer network of a service provider. In particular the invention includes modular medical censoring and monitoring devices that is linked to a processor for processing the data and communicating the data to a service provider in real time or at a predetermined future data. Furthermore the invention includes processing of the data and displaying the data on the display means of the communication device. Also included within the scope of the invention is the step of associating voice inputs with pre-programmed datasets including numbers of telephone subscribers and certain predefined or preprogrammed instructions.		

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/ZA 99/00143

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61B5/00 G06F19/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A61B G06F H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 49077 A (NOKIA MOBILE PHONES LTD ;KUUSELA TOM (FI); KAILA TIMO (FI)) 24 December 1997 (1997-12-24) the whole document ---	1-17
X	US 5 772 586 A (OKKONEN HARRI ET AL) 30 June 1998 (1998-06-30) the whole document ---	1-17
A	US 5 544 661 A (LONG PAUL V ET AL) 13 August 1996 (1996-08-13) abstract column 2, line 57 -column 3, line 30 figure 1 --- -/--	11-14

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

3 July 2000

Date of mailing of the international search report

12/07/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Tzimeas, K

# INTERNATIONAL SEARCH REPORT

Intern. al Application No

PCT/ZA 99/00143

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 5 564 429 A (BORN ROBERT ET AL)  15 October 1996 (1996-10-15)  abstract  column 6, line 39 -column 8, line 15  figures 1,2  -----</p>	16

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Internal Application No

PCT/ZA 99/00143

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9749077	A	24-12-1997	FI 2607 U AU 3177197 A EP 0907942 A	27-09-1996 07-01-1998 14-04-1999
US 5772586	A	30-06-1998	FI 960636 A AU 1726697 A EP 0959755 A WO 9728736 A	13-08-1997 28-08-1997 01-12-1999 14-08-1997
US 5544661	A	13-08-1996	NONE	
US 5564429	A	15-10-1996	US 5348008 A US 5353793 A AU 2908792 A EP 0615424 A WO 9310706 A	20-09-1994 11-10-1994 28-06-1993 21-09-1994 10-06-1993